

ABSTRACT OF THE DISCLOSURE

The invention relates to a polyoxometalate topical composition for removing a contaminant from an environment, comprising a topical carrier and at least one

5 polyoxometalate, with the proviso that the polyoxometalate is not $\text{H}_5\text{PV}_2\text{Mo}_{10}\text{O}_{40}$; $\text{K}_5\text{Si}(\text{H}_2\text{O})\text{Mn}^{\text{III}}\text{W}_{11}\text{O}_{39}$; $\text{K}_4\text{Si}(\text{H}_2\text{O})\text{Mn}^{\text{IV}}\text{W}_{11}\text{O}_{39}$; or $\text{K}_5\text{Co}^{\text{III}}\text{W}_{12}\text{O}_{40}$. The invention further relates to a method for removing a contaminant from an environment, comprising contacting the polyoxometalate topical composition of the present invention with the environment containing the contaminant for a sufficient time to remove the contaminant

10 from the environment. The invention further relates to a method for removing a contaminant from an environment, comprising contacting a polyoxometalate powder or a polyoxometalate coating with the environment containing the contaminant for a sufficient time to remove the contaminant from the environment. The invention further relates to a modified polyoxometalate, wherein the modified polyoxometalate comprises

15 the admixture of (1) a polyoxometalate and (2) a cerium compound, a silver compound, a gold compound, a platinum compound, or a combination thereof. The invention further relates to a method for removing a contaminant from an environment, comprising contacting a modified material with the environment containing the contaminant for a sufficient time to remove the contaminant from the environment,

20 wherein the modified material comprises (1) a material and (2) a metal compound comprising a transition metal compound, an actinide compound, a lanthanide compound, or a combination thereof, wherein the metal compound is not a polyoxometalate. The invention further relates to a modified material for removing a contaminant from an environment, wherein the modified material comprises (1) a

25 material comprising a topical carrier, a powder, a coating, or a fabric, and (2) a metal compound comprising a transition metal compound, an actinide compound, a lanthanide compound, or a combination thereof, wherein the metal compound is not a polyoxometalate. The invention further relates to an article comprising the modified material of the present invention.